

computer processor 404 using software stored on the data storage 404. In other embodiments, the collect data process 506 may execute on the computer processor 404 using software stored on the data storage 404 and the analyze data process 502 may execute on a processor within the personal communicator 408 using software stored on the personal communicator 408. In still another embodiment, the processes may execute on more than one processor and may use data stored in more than one data store. Further, the processes may execute on processes available over a network or over the Internet.

The foregoing describes preferred embodiments of the invention and is given by way of example only. The invention is not limited to any of the specific features described herein, but includes all variations thereof within the scope of the appended claims.

What is claimed is:

1. A computer system for assisting a physician comprising  
computer processor means for processing data;  
data storage means for storing data on a storage medium;  
first means for processing data regarding a patient, a diagnosis regarding the patient,  
5 and a treatment plan for the patient and for using such data to (a) generate alarms  
if the diagnosis or treatment plan is inappropriate and to (b) provide advice  
regarding the diagnosis and treatment plan;  
second means for processing data regarding the alarms and advice and for using such  
data to communicate the alarms and advice to the physician;  
10 third means for processing data regarding the treatment plan and using such data to  
implement the treatment plan; and  
fourth means for processing data regarding the patient, the diagnosis regarding the  
patient, and the treatment plan, and storing such data on the data storage means.
2. The computer system of claim 1 wherein the first means for processing data  
15 comprises  
a suggest diagnosis means for processing data using a subset of the patient data to  
access a suggested diagnosis database to retrieve a suggested diagnosis; and  
a check diagnosis means for processing data for comparing the diagnosis to the  
suggested diagnosis and for generating an alarm if there is a substantial  
20 difference.
3. The computer system of claim 1 wherein the first means for processing data  
comprises  
a find standard diagnostic criteria means for processing data using a subset of the  
diagnosis to access a standard diagnosis criteria database to produce a standard  
25 diagnosis criteria.

1. A computer system for assisting a physician comprising  
computer processor means for processing data;  
data storage means for storing data on a storage medium;  
first means for processing data regarding a patient, a diagnosis regarding the patient,  
5 and a treatment plan for the patient and for using such data to (a) generate alarms  
if the diagnosis or treatment plan is inappropriate and to (b) provide advice  
regarding the diagnosis and treatment plan;  
second means for processing data regarding the alarms and advice and for using such  
data to communicate the alarms and advice to the physician;  
10 third means for processing data regarding the treatment plan and using such data to  
implement the treatment plan; and  
fourth means for processing data regarding the patient, the diagnosis regarding the  
patient, and the treatment plan, and storing such data on the data storage means.

2. The computer system of claim 1 wherein the first means for processing data  
15 comprises

a suggest diagnosis means for processing data using a subset of the patient data to  
access a suggested diagnosis database to retrieve a suggested diagnosis; and  
a check diagnosis means for processing data for comparing the diagnosis to the  
suggested diagnosis and for generating an alarm if there is a substantial  
20 difference.

3. The computer system of claim 1 wherein the first means for processing data  
comprises

a find standard diagnostic criteria means for processing data using a subset of the  
diagnosis to access a standard diagnosis criteria database to produce a standard  
25 diagnosis criteria.

4. The computer system of claim 1 wherein the treatment plan includes a prescription and the first means for processing data comprises

a get drug data means for processing data using a subset of the patient data to retrieve from a pharmacy the drugs prescribed for the patient and from the data storage

5 means an identification of other drugs that the patient is taking; and

an interaction checking means for processing data to access a drug interaction database with (a) the drugs prescribed for the patient, (b) the other drugs that the patient is taking, and (c) the prescription, to produce an alarm if there is an indication of an interaction.

10 5. The computer system of claim 4 wherein the interaction checking means comprises

mitigating means for suggesting methods to mitigate the interaction; and

alternative recommendation means for suggesting alternative drugs with no interaction.

15 6. The computer system of claim 1 wherein the first means for processing data comprises

a get patient data means for processing data for accessing the data storage means to retrieve stored data regarding the patient;

20 a find treatment means for processing data for accessing a treatment protocol database using a subset of the patient data and a subset of the stored patient data to retrieve a recommended treatment protocol.

7. The computer system of claim 1 wherein the first means for processing data comprises

25 a get patient data means for processing data for accessing the data storage means to retrieve stored data regarding the patient;

a treatment search means for processing data for accessing a treatment recommendation database using a subset of the patient data and a subset of the stored patient data to retrieve a treatment individualization recommendation.

8. The computer system of claim 1 wherein the diagnosis comprises a prescription and the first means for processing data comprises

a get lab data means for processing data using a subset of the patient data to acquire laboratory results from a laboratory;

5 a find dosage means for processing data for using the lab results, a subset of the patient data, the prescription and data regarding the patient stored on the data storage means to access a recommended dosage database to produce a recommended dosage for the prescription.

9. The computer system of claim 1 wherein the patient data comprises foods the patient eats, the treatment plan comprises a prescription and the first means for processing data comprises

a get drug data means for processing data using a subset of the patient data to retrieve from a pharmacy the drugs prescribed for the patient and from the data storage means an identification of other drugs that the patient is taking; and

15 an interaction checking means for processing data to access a drug/food interaction database with (a) the drugs prescribed for the patient, (b) the other drugs that the patient is taking, (c) the prescription and (d) the foods the patient eats, to produce an alarm if there is an indication of an interaction.

10. The computer system of claim 9 wherein the interaction checking means includes  
20 a recommendation means for recommending a drug that will not have an interaction.

11. The computer system of claim 1 wherein the treatment plan comprises a prescription and radiology tests and the first means for processing data comprises

a get drug data means for processing data using a subset of the patient data to retrieve from a pharmacy the drugs prescribed for the patient and from the data storage

5 means an identification of other drugs that the patient is taking; and

an X-ray compatibility checking means for processing data to access a radiology/drug interaction database with (a) the drugs prescribed for the patient, (b) the other drugs that the patient is taking, (c) the prescription and (d) the radiology tests from the treatment plan, to produce an alarm if there is an indication of an  
10 interaction.

12. The computer system of claim 1 wherein the treatment plan comprises an order for X-rays and the first means for processing data comprises

a check X-rays means for processing data using a subset of the patient data to acquire laboratory results from a laboratory and for accessing an X-ray contraindication  
15 database with the laboratory results and the order for X-rays to produce a contraindication and to process the contraindication to produce an alarm.

13. The computer system of claim 12 wherein the check X-rays means for processing data also processes the contraindication to produce a recommendation.

14. The computer system of claim 1 wherein the treatment plan comprises a  
20 prescription and the first means for processing data comprises

a get drug data means for processing data using a subset of the patient data to retrieve from a pharmacy the drugs prescribed for the patient and from the data storage means an identification of other drugs that the patient is taking; and

a drug cost means for processing data to access a drug cost database with (a) the  
25 drugs prescribed for the patient, (b) the other drugs that the patient is taking, and (c) the prescription, to produce an alarm if there is an indication that the patient is spending more on drugs than is necessary and to make a recommendation for a lower cost drug.

15. The computer system of claim 1 wherein the first means for processing data comprises

a check risks means for processing data using a subset of the patient data to access a risk data base to produce a risk reduction recommendation for the patient.

5 16. The computer system of claim 1 further comprising

a fifth means for processing data through which a patient has access to data regarding the patient stored on the storage means.

17. The computer system of claim 16 wherein the patient has access to the first means.

10 18. The computer system of claim 1 wherein the third means comprises a personal communicator.

19. The computer system of claim 18 wherein the personal communicator comprises a personal digital assistant.

15 20. The computer system of claim 18 wherein the personal communicator comprises a personal computer.

21. The computer system of claim 18 wherein the personal communicator comprises a PC database for storing patient data.

20 22. The computer system of claim 21 wherein the PC database is protected by a first security system; and the data storage means is protected by a second security system.

23. The computer system of claim 18 wherein the personal communicator comprises a display, the display comprising
- 5 a red alert area, where alarms regarding the potential for a major adverse effect are displayed; and
- a yellow alert area, where alarms regarding the potential for a minor effect or need for closer monitoring are displayed.
24. The computer system of claim 18 wherein
- the third means communicates with the computer processor means through a communications media.
- 10 25. The computer system of claim 24 wherein
- the communications media is a wireless communications media.
26. The computer system of claim 25 wherein
- the wireless communications media comprises one or more of the following types of media: RF, optical or infrared.
- 15 27. The computer system of claim 24 wherein
- the communications media is a wired communications media.
28. The computer system of claim 27 wherein
- the wired communications media comprises one or more of the following types of media: twisted pair cable, coax cable, or optical cable.



29. The computer system of claim 1 wherein the data stored on the data storage means comprises one or more of the following:

- a suggested diagnosis database;
- a standard diagnostic criteria database;
- 5 a drug interaction database;
- a treatment protocol database;
- a treatment recommendation database;
- a recommended dosage database;
- a radiology/drug interaction database;
- 10 an X-ray contraindication database;
- a drug cost database; and
- a risk database.

30. The computer system of claim 1 wherein the first means has access to one or more of the following via the Internet:

- 15 a suggested diagnosis database;
- a standard diagnostic criteria database;
- a drug interaction database;
- a treatment protocol database;
- a treatment recommendation database;
- 20 a recommended dosage database;
- a radiology/drug interaction database;
- an X-ray contraindication database;
- a drug cost database; and
- a risk database.

31. The computer system of claim 1 wherein the third means comprises an ICD determination means for processing a subset of the patient data, a subset of the diagnosis and a subset of the treatment plan to determine an ICD.

32. The computer system of claim 1 wherein the treatment plan comprises a prescription and an order, the patient data comprises an ICD, and the third means comprises one or more of the following:

- 5 a print prescription means for processing data for using the prescription to print a prescription form;
- an inform pharmacy means for processing data for using the prescription to inform a pharmacy of the prescription;
- a store data means for processing data to store patient data on a hospital computer;
- an enter order means for processing data to enter the order in a physician order entry
- 10 system;
- a save ICD means for processing data to save the ICD in a business office.

33. A computerized method for providing assistance to a physician who has gathered data from a patient, made a diagnosis, and prepared a treatment plan, the treatment plan comprising one or more of the following: (a) a prescription, (b) radiology tests, (c) X-

15 rays, and (d) a treatment protocol, the method being accomplished using a personal communicator, a computer processor coupled to the personal communicator through a communications media, a data storage media coupled to the computer processor, and Internet resources coupled to the computer processor, the method comprising

- 20 entering patient data, a diagnosis and a treatment plan into the personal communicator;
- selecting, through the personal communicator, one or more of the following actions:
  - implementing the treatment plan;
  - consulting resources to produce an alarm and a recommendation, displaying the
  - alarm and the recommendation, and allowing the physician to revise the
  - 25 diagnosis and treatment plan based on the alarm and the recommendation.

34. The method of claim 33 wherein implementing the treatment plan comprises one or more of the following

- printing a prescription;
- informing a pharmacy of the prescription;
- 5 storing the patient data, the diagnosis, and the treatment plan on a hospital computer;
- entering an order into a physician order entry system; and
- saving an ICD in a business office.

35. The method of claim 33 wherein consulting resources to produce an alarm and a recommendation comprises

- 10 offering the physician consultation choices;
- communicating a subset of the patient data, the diagnosis, the treatment plan and the consultation choice to the computer processor;
- processing the patient data, the diagnosis and the treatment plan in accordance with the consultation choice to produce alarms and advice;
- 15 communicating the alarms and advice to the personal communicator.

36. The method of claim 35 wherein processing the patient data, the diagnosis and the treatment plan in accordance with the consultation choice to produce alarms and advice comprises performing one or more of the following actions:

- checking the accuracy of the diagnosis;
- 5 reviewing standard diagnostic criteria;
- checking the appropriateness of prescribed medication;
- reviewing recommended treatment protocols;
- reviewing individualization recommendations;
- recommending dose adjustments;
- 10 checking for adverse medication interactions;
- checking for adverse food interactions;
- checking for adverse medication/radiology interactions;
- checking for X-ray contraindications;
- checking the cost of prescribed medications;
- 15 transferring clinical notes to medical records;
- reviewing standard immunization protocols; and
- recommending routine screening measures.

37. The method of claim 34 further comprising  
accepting clinical notes regarding the patient.

20 38. The method of claim 37 wherein accepting the clinical notes comprises  
recording a spoken rendering of the clinical notes.